

Remarks:

These remarks are responsive to the Office action dated January 12, 2005. Prior to the entry of this amendment, claims 1-18 remained pending in the application. Claims 19-22 have been withdrawn pursuant to an earlier restriction requirement.

Claims 1-9

In the present Office action, claims 1-3 and 6-9 are rejected under 35 U.S.C. § 102(b) variously in view of Ogawa (US 5,585,662), Bezama et. al. (US 5,585,663), Srikrishnan et. al. (US 5,469,981) or Keller et. al. (US 5,457,059). Claims 4-5 stand rejected under 35 U.S.C. § 103(a), as being unpatentable over Ogawa (US 5,585,662).

Ogawa, Bezama et al., Srikrishnan et. al. and Keller et. al. disclose various fuses that span a gap in a conductive layer of integrated circuit devices. However, none of the references disclose a fuse configured for use in a printhead. More particularly, the references fail to disclose or suggest a fuse spanning a gap in an electrically conductive layer wherein a dielectric layer is disposed adjacent the electrically conductive layer and a fluid barrier layer is disposed adjacent the electrically conductive layer.

As amended, claim 1 recites a printhead including: a substrate; a first layer disposed adjacent the substrate; a second layer disposed adjacent the first layer; an electrically conductive third layer; a fuse disposed between the third layer and the first layer, wherein the fuse is electrically coupled to the third layer and wherein the fuse is located proximate the gap in the third layer; a dielectric layer disposed adjacent the third layer; and a fluid barrier layer disposed adjacent the dielectric

layer. As noted, none of the cited references disclose or suggest a printhead including a fuse spanning a gap in an electrically conductive layer wherein a dielectric layer is disposed adjacent the electrically conductive layer and a fluid barrier layer is disposed adjacent the electrically conductive layer. The rejections under 35 U.S.C. § 102(b) in view of Ogawa (US 5,585,662), Bezama et. al. (US 5,585,663), Srikrishnan et. al. (US 5,469,981) and Keller et. al. (US 5,457,059) thus must be withdrawn.

Moreover, as amended, claim 1 incorporates the subject matter of original claim 6, which was rejected only in view of Bezama et al. Bezama et al. discloses a self cooling electrically programmable fuse for use in a Very Large Integrated Circuits (VLSI). There is no mention in Bezama et al. of employing such a configuration in a printhead. Accordingly, there is no suggestion of any need for a fluid barrier layer, as recited in amended claim 1.

Although the Examiner contends that layer 6 (or layer 13) is a barrier layer, the Examiner acknowledges that "the reference does not explicitly disclose the barrier properties of the insulating layers 6 or 13." (January 11, 2005 Office action, paragraph 5) The Examiner thus asserts that layers 6 or 13 "inherently possesses [sic] barrier properties to, for example, the elements (the environment) disposed adjacent the dielectric layer." Id. The Examiner provides no support for this assertion. Furthermore, even if accurate, the barrier properties suggested by the Examiner are very different from the properties of the fluid barrier recited by applicant.

Bezama et al. makes clear that layer 6 is a passivation layer, and that layer 13 is an insulating layer chosen for its thermal properties. (Bezama et al., col. 4, lines 22-36) Fluid barrier properties are not even considered by Bezama et al. For at least this reason, claim 1 is allowable, and the rejections of claim 1 must be withdrawn.

Claims 2-5 and 7-9 depend from claim 1, and are allowable for at least the same reasons as claim 1. Claim 6 has been cancelled without prejudice.

Claims 10-14 (Rejections based on Nathan et al. and Bezama et al.)

Claims 10-14 are rejected under 35 U.S.C. § 102(b) either in view of Nathan et. al. (US 5,813,881) or in view of Bezama et. al. (US 5,585,663). In the alternative, claims 10-14 stand rejected under 35 U.S.C. § 103(a) in view of Bezama et. al.

Nathan et al. and Bezama et al. disclose fuses for use in integrated circuit devices. However, neither Nathan et al. nor Bezama et al. disclose a fuse configured for use in a printhead. More particularly, the references fail to disclose or suggest a fuse electrically coupled to a metal layer wherein a second dielectric layer adjoins the metal layer opposite a first dielectric layer, and a fluid barrier layer adjoins the second dielectric layer to prevent fluid from contacting the metal layer.

As amended, claim 10 recites a printhead including: a substrate; a thermal isolation layer adjoining the substrate; a first dielectric layer adjoining the thermal isolation layer; a metal layer adjoining the first dielectric layer; a fuse disposed in the first dielectric layer and electrically coupled to the metal layer; a second dielectric layer adjoining the metal layer opposite the first dielectric layer; and a fluid barrier layer adjoining the second dielectric layer to prevent fluid from contacting the metal layer. As noted, neither Nathan et al. nor Bezama et al. disclose or suggest a

printhead including a fuse electrically coupled to a metal layer wherein a second dielectric layer adjoins the metal layer opposite a first dielectric layer, and a fluid barrier layer adjoins the metal layer to prevent printing fluid from contacting the metal layer. The rejections under 35 U.S.C. § 102(b) in view of Nathan et al. and Bezama et. Al. thus must be withdrawn.

Focusing on the rejections under 35 U.S.C. § 102(b) based on Nathan et. al., it is noted that Nathan et al. discloses a programmable cable and cable adapter that employs fuses. There is no mention of a printhead, or of any fluid barrier configured to prevent fluid from contacting a metal layer within a printhead. In fact, despite the Examiner's indication that layer 31B inherently possesses barrier properties, there is no indication in Nathan et al. of any such barrier properties. Moreover, there is no need for any fluid barrier in the programmable cable and cable adapter described by Nathan et al.

Furthermore, the Examiner expressly asserts that the dielectric layer 38 and the dielectric layer 38A as taught by Nathan et. al., anticipate the thermal isolation layer and the first dielectric layer, respectively, of claim 10. However, as amended, claim 10, recites, in part, a first dielectric layer *adjoining* the thermal isolation layer. Conversely, Nathan et. al. depicts (in Figure 4A) substrate layer 31A disposed between insulating layers 38 and 38A such that insulating layers 38 and 38A are not *adjoining*. Nathan et. al., therefore, both fails to anticipate every element of amended claim 10. Claim 10 thus is allowable over Nathan et al., and the rejection of claim 10 based on Nathan et al. should be withdrawn.

Regarding Bezama et al., it is again noted that Bezama does not disclose a fluid barrier layer as recited in claim 10. Moreover, even if layers 6 and 13 are barrier layers (as the Examiner asserts without support), the barrier properties indicated by the Examiner are very different from the properties of the fluid barrier recited by applicant. Bezama et al. makes clear that layer 6 is a passivation layer, and that layer 13 is an insulating layer chosen for its thermal properties. (Bezama et al., col. 4, lines 22-36) Fluid barrier properties are not even considered by Bezama et al. For at least this reason, claim 10 is allowable over Bezama et al., and the rejection of claim 10 based on Bezama et al. must be withdrawn.

Claims 11-14 depend from claim 10, and thus are allowable over Nathan et al. and Bezama et al. for at least the same reasons as claim 10. The rejections of claims 11-14 based on Nathan et al. and Bezama et al. thus should be withdrawn.

Claims 10 and 12-18 (Rejections based on Baek)

Claims 10, 12-14, 16, and 18 are rejected under 35 U.S.C. § 102(e) in view of Baek (US 2004/0085405). Claims 15 and 17 are rejected under 35 U.S.C. § 103(a), also in view of Baek.

Applicant submits herewith a Declaration Under § 1.131, demonstrating conception and reduction to practice of the claimed invention prior to the effective date of Baek. The Examiner's rejections under 35 U.S.C. § 102(e) and 35 U.S.C. § 103(a) in view of Baek thus are rendered moot. Claims 10 and 12-18 thus are understood to be in allowable form.

Conclusion

Applicant believes that this application is now in condition for allowance, in view of the above amendments and remarks. Accordingly, applicant respectfully requests that the Examiner issue a Notice of Allowability covering the pending claims. If the Examiner has any questions, or if a telephone interview would in any way advance prosecution of the application, please contact the undersigned attorney of record.

Respectfully submitted,

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CERTIFICATE OF FACSIMILE TRANSMISSION

I hereby certify that this correspondence is being facsimile transmitted to Examiner T. Ho, Group Art Unit 2818, Assistant Commissioner for Patents, at facsimile number (703) 872-9306 on April 12, 2005.



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